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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 09/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/655,755

Applicant(s)

ERIKSSON, ANDERS

Examiner

Edith M Chang

Art Unit

2637

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-14 and 16-22 is/are rejected.
- 7) ☒ Claim(s) 5 and 15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments/Remarks

1. Applicant's arguments filed June 7 2004 have been fully considered but they are not persuasive.

A: The applicant argues that anticipation requires the presence in the Gustafsson disclosure of all elements of the claimed invention arranged as in the claim 1, and Gustafsson performs different function.

Response: Gustafsson discloses a digital filter design/convolution apparatus with its method (FIG.4). The apparatus comprises means for determining a real-valued discrete-frequency representation (block element 305/310), means for transforming the frequency representation into the time representation (block element 370), means for circularly shifting the time representation (block element 370, column 7 lines 55-60 & column 8 lines 16-25 wherein the linear phase filter can be performed in the time-domain so the gain function is transformed to the time-domain using an IFFT where the circular shift is done), means for applying a shortening window to the time representation to produce a zero-padded reduced length filter (block element 370, column 8 lines 16-33, wherein the time domain shifted impulse response is zero-padded to a length N). Therefore, Gustafsson discloses all elements arranged as and performs the function of the claimed invention *as cited in the claim*. Hence, Gustafsson anticipates the claimed invention.

B: The applicant argues that Gustafsson does not disclose the invention depending upon a specific ordering of the performance of claim limitations.

Argument: The specific ordering of the performance of claim limitations is established by the structure of elements in the claim, such as the relationship of the input that the limitation works upon/takes in, not merely by the ordering the limitations listed in the claim.

The rejections are upheld.

Claim Objections

2. Claims 1-22 are objected to because of the following informalities:

Claims 1, 7, 13 and 17, line 4: “said discrete-frequency representation” is suggested changing to “said real-valued discrete-frequency representation”.

Claims 2, 6, 8-9, 14, 16 and 18-19, line 2: “said reduced length filter” is suggested changing to “said zero-padded reduced length filter”.

Claim 5, line 1: “said window” is suggested changing to “said shortening window”.

Claim 10, lines 1-2: “including the step of performing the convolution step in the time domain” is suggested changing to “the step of convolving further including the step of performing the convolution in the time domain”.

line 3: “said reduced length filter” is suggested changing to “said zero-padded reduced length filter”.

Claims 11-12, “further including the step of performing the convolution step in the time domain” is suggested changing to “further the step of convolving including the step of performing the convolution in the time domain”.

Claim 15, lines 1-2: “said window applying means” is suggested changing to “the shortening window applying means”.

Claim 20, line 2: “the convolution step” is suggested changing to “the convolution”;
line 3: “said reduced length filter” is suggested changing to “said zero-padded
reduced length filter”.

Claims 21-22, line 2: “the convolution step” is suggested changing to “the convolution”.

Claims 3-4 are directly depend on the object claim 1.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 10-12 and 20-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 10 & 20, line 2: “the convolution step in the time domain” lacks antecedent basis.

Claims 11-12 & 21-22, line 2: “the convolution step in the frequency domain” lacks antecedent basis.

Claims 11 & 21, lines 2-3: “an overlap-add method” does not clearly indicate what this method is and its relationship with other steps in the method of this claim and its parent claim.

Claims 12 & 22, lines 2-3: “an overlap-save method” does not clearly indicate what this method is and its relationship with other steps in the method of this claim and its parent claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-4, 6-14, 16-22 are rejected under 35 U.S.C. 102(e) as being anticipated by Gustafsson et al. (US 6459914 B1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

Regarding **claims 1, 7, 13, & 17**, Gustafsson et al. discloses a digital filter design apparatus and its method/a digital convolution apparatus and its method (FIG.3/4), including: means for determining a real-valued discrete-frequency representation of a desired full length digital filter (305 FIG.3/4 where $G_{M\uparrow N}$ is the discrete-frequency representation, column 6 lines 15-30 wherein the full length is presented); means for transforming the discrete-frequency representation into a corresponding discrete-time representation (column 8 lines 16-24 wherein the IFFT is the means for transforming the discrete-frequency); means for circularly shifting the discrete-time representation (column 7 line 55-column 8 line 25 where the linear phase filter

performs circularly shifting in the time-domain); and means for applying a shortening window to the discrete-time representation to produce a zero-padded reduced length filter or for convolving an input signal with the zero-padded reduced length filter (325-350 FIG.3/4 is the means for applying a shortening window and to produced a zero-padded reduced length filter, column 8 lines 18-33 where the phase filter is the shortening window applied to the discrete-time representation , the minimum phase filter is the zero-padded reduced length filter).

Regarding **claims 2, 8, 14 & 18**, Gustafsson et al. discloses the circularly shifting the reduced length filter to remove leading zeroes (column 7 lines 55-67, column 11 lines 60-62, the leading zeroes are removed).

Regarding **claim 3**, Gustafsson et al. discloses the discrete-frequency representation is formed by a noise suppressing spectral subtraction algorithm (300 FIG.3/4, column 8 lines 58-60).

Regarding **claim 4**, Gustafsson et al. discloses the discrete-frequency representation formed by a frequency selective non-linear algorithm for echo cancellation (column 1 lines 24-30 where the echo cancellation applied, column 2 lines 53-60 where the algorithm for the echo cancellation).

Regarding **claims 6, 9, 16 & 19**, Gustafsson et al. discloses means for transforming the reduced length filter into a minimum phase filter (column 8 lines 25-30).

Regarding **claims 10 & 20**, Gustafsson et al. discloses the convolution step in the time domain using the discrete-time representation of the reduced length filter (column 2 lines 20-25 where the convolution is used in the spectral subtraction, column 8 lines 18-25 where the convolution performs in the time domain).

Regarding **claims 11-12 & 21-22**, Gustafsson et al. discloses the convolution step in the frequency domain by using the overlap-add method (310-360 Fig.3/4).

Allowable Subject Matter

7. Claims 5 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter:

Claims are allowable over prior art of record because the prior art of record does not teach or suggest, alone or in a combination, among other things, at least a digital filter design apparatus and its method as a whole, the combination of elements and features as claimed, which includes the shortening window applying means implementing a Kaiser window.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

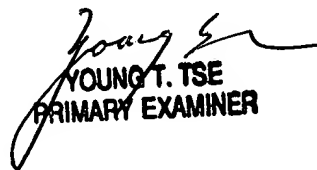
CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jayanti Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang
August 30, 2004


YOUNG T. TSE
PRIMARY EXAMINER